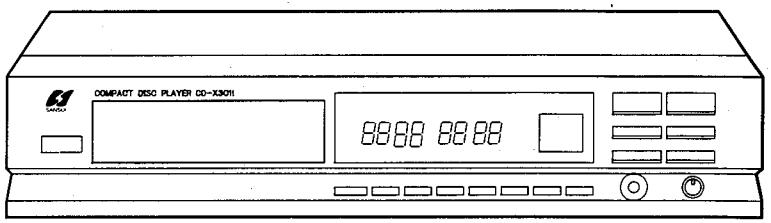
SANSUI

SERVICE MANUAL

CD-X301*i*

COMPACT DISC PLAYER



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety.
   Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

•SPECIFICATIONS

Format ..... Compact disc, digital audio
Pick-up ..... 3-beam, semiconductor laser
No. of channels ..... 2 channels (stereo)
Decoding (D/A) ..... 16-bit linear
Frequency response ..... 4 Hz ~ 20 kHz ±0.5 dB
Total harmonic distortion Less than 0.03% (1 kHz)
Signal-to-noise ratio (S/N) Better than 100 dB
Dynamic range ..... Better than 96 dB
Wow and flutter ..... Below measurable limit
Output voltage/load impedance
Normal output (LINE OUT)
..... 2V/5 kohms
Headphones ..... 45 mW (variable maximum)/ with 32-ohms load
Power requirements ..... AC 120V/220 ~ 240V 50/60 Hz
For U.S.A. & Canada .. AC 120V, 60 Hz
Power consumption ..... 12 watts

Dimensions ..... 430 mm (16-15/16″) W
96 mm (3-13/16″) H
281 mm (11-1/8″) D
Weight ..... 4 kg (11.0 lbs) net

Remote controller: RS-1030

Control system ..... Infra-red ray pulse system
Power requirements ..... DC 3V
Dimensions ..... 60 mm (2-3/8″) W
18.3 mm (3/4″) H
141 mm (5-9/16″) D
Weight ..... 95 g (0.2 lbs) including dry batteries

* Design and specifications subject to changes without notice for improvements.
* Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors.

NOTICE

1. The symbols, UL, CSA, SA, BS, UK, EU, AS, SEV, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

UL	Manufactured for U.S.A market. (Underwriters Laboratories approved model.)
CSA	Manufactured for Canadian market.
SA	Manufactured for South African market.
BS, UK	Manufactured for United Kingdom market.
EU	Manufactured for European market.
AS	Manufactured for Australian market.
SEV	Manufactured for Swiss market.
SS	Manufactured for Saudi Arabia market.
XX <EXPORT>	Standard Version.
NON MARK	Common Parts.

2. Some printed circuit boards are not supplied assembled. To separate these in this service manual, the stock numbers are not indicated for these boards. However, stock numbers for individual parts are indicated.

3. Since some capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

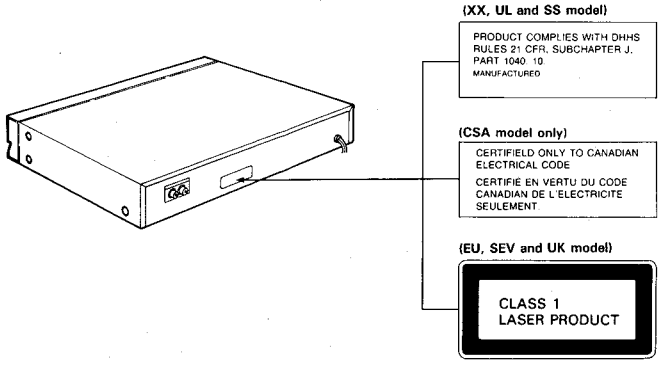
4. Abbreviations in this service manual are as follows.

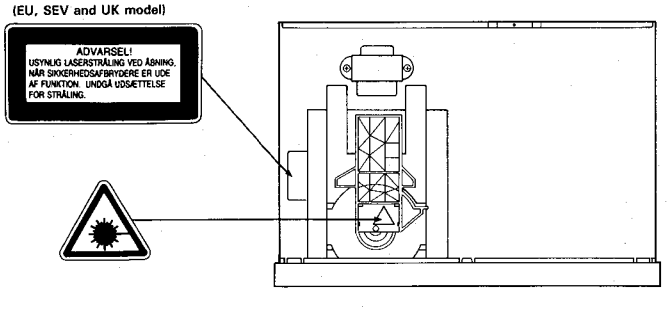
•Abbreviations List

C.R.	: Carbon Resistor
S.R.	: Solid Resistor
Ce.R.	: Cement Resistor
M.R.	: Metal Film Resistor
F.R.	: Fusing Resistor
N.I.R.	: Non-Inflammable Resistor
A.R.	: Array Resistor
C.C.	: Ceramic Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation
E.C.	: Electrolytic Capacitor
E.L.	: Low Leak Electrolytic Capacitor
E.B.	: Bi-Polar Electrolytic Capacitor
E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
Ta.C.	: Tantalum Capacitor
F.C.	: Film Capacitor
M.P.	: Metalized Paper Capacitor
P.C.	: Polystyrene Capacitor
M.M.C.	: Metalized Mylar Capacitor
A.C.	: Array Capacitor
V.R.	: Variable Resistor
S.V.R.	: Semi Variable Resistor
SW.	: Switch
Chip R.	: Chip Resistor
Chip C.	: Chip Capacitor

Cautions Concerning Handling of The Laser

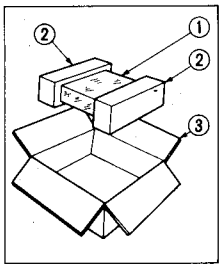
The following lable has been affixed to the unit, listing the proper procedure for working with the laser beam.


(XX, UL and SS model)
PRODUCT COMPLIES WITH DHHS RULES 21 CFR, SUBCHAPTER J, PART 1040 10
MANUFACTURED
(CSA model only)
CERTIFIELD ONLY TO CANADIAN ELECTRICAL CODE
CERTIFIÉ EN VERTU DU CODE CANADIAN DE L'ELECTRICITE SEULEMENT
(EU, SEV and UK model)
CLASS 1
LASER PRODUCT


(EU, SEV and UK model)
ADVARSEL!
USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

1. PACKING LIST

Parts No.	Stock No.	Description
1	27306700	Vinyl Bag
2	27606100	Styrofoam Packing
3	27606000	Carton Case

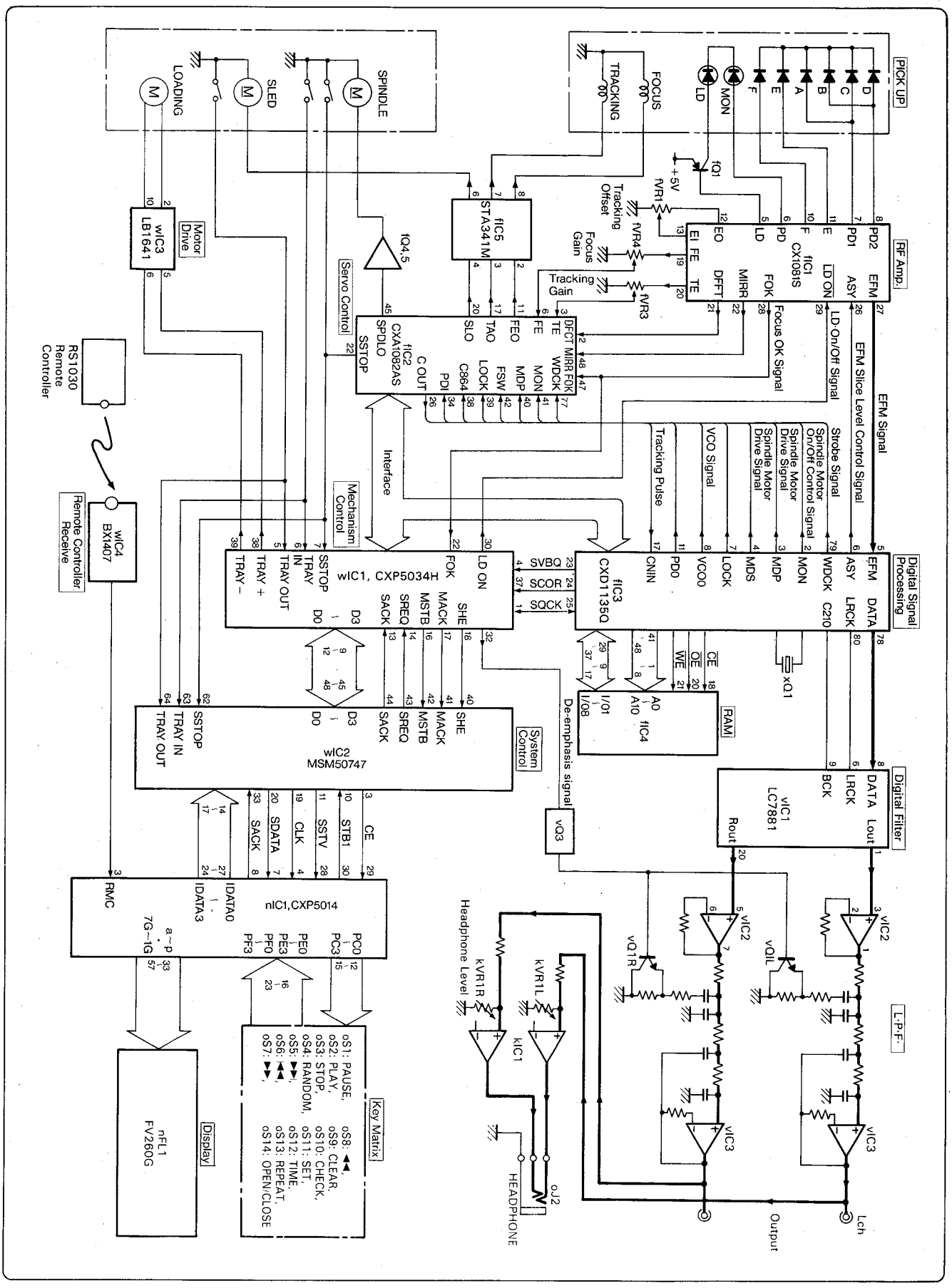


2. ACCESSORY LIST

Parts No.	Stock No.	Description
	———	RS-1030 Remoto Controller
	———	SUM-3K Dry Battery
	07193400	Pin Plug Cord
	27653400	CS-1 8cm-CD Adaptor Ass'y
	49038900	Operating Instruction (*E•F•S)
	49039000	Operating Instruction (*G•I•Sw)

***Note:**
E•F•S: **E**nglish•**F**rench and **S**panish Version
G•I•Sw: **G**erman•**I**talian and **Sw**edish Version

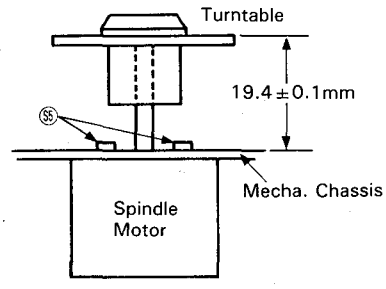
3. BLOCK DIAGRAM

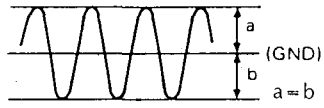
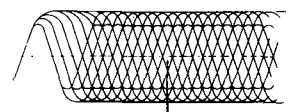
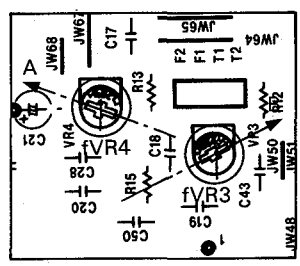


4. ADJUSTMENTS

Note: 1) Required test disc CD-1 of EIAJ.
2) With respect to the test points and adjusting positions of F-5995 and F-5999 boards, see "Parts Location on Board" on page 4.
3) Be sure to adjust the height whenever the spindle motor and turntable have been replaced.
* Adjust the distance between the upper surface of turntable and the mechanism chassis to 19.4±0.1mm as shown in figure 4-1.

Fig. 4-1

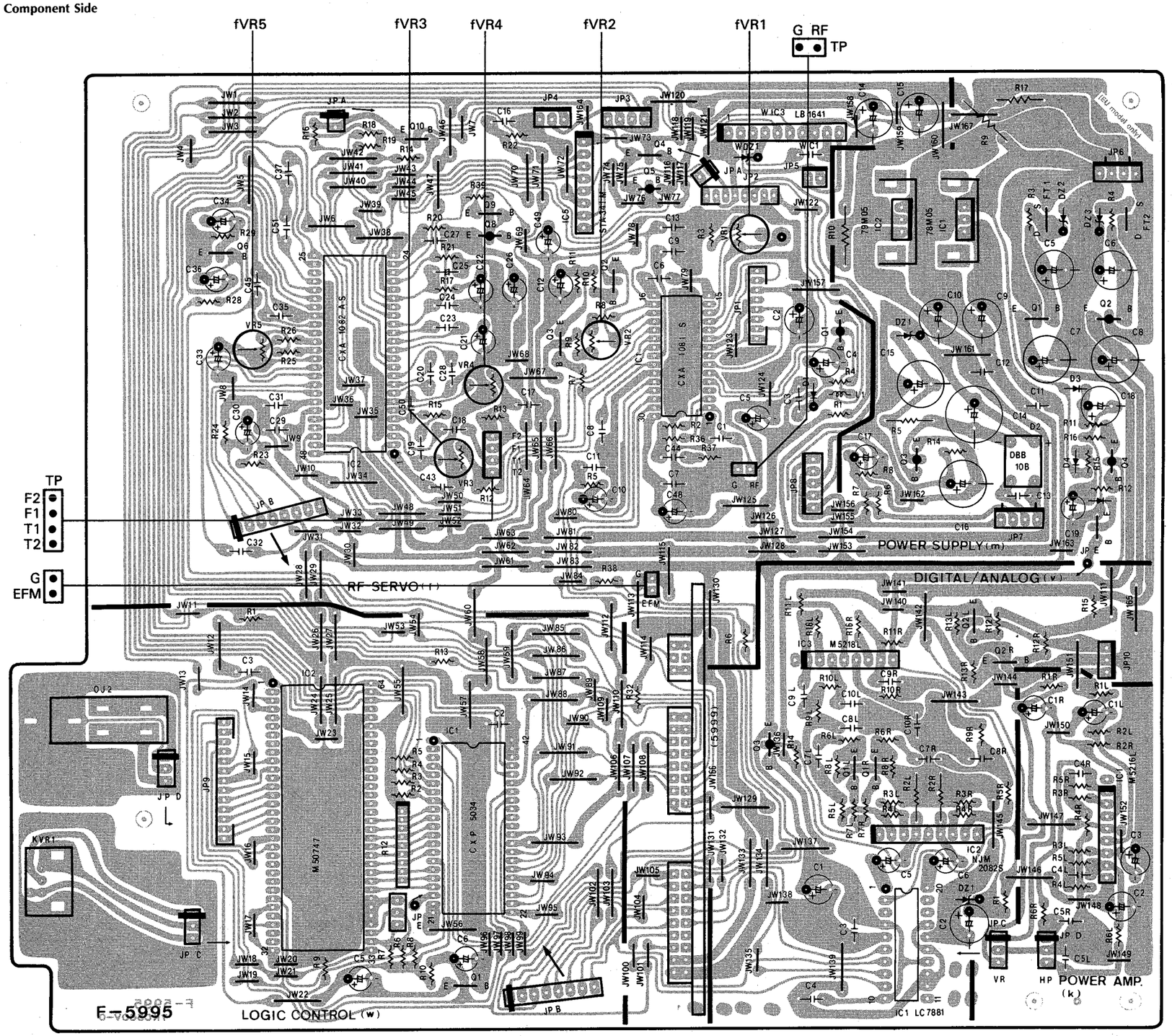


STEP	SUBJECT	MEASURE OUTPUT	ADJUST. PARTS	ADJUSTMENT	SETTING CONDITIONS AND REMARKS
1	VCO Adj. (STOP mode)	Test Pin TP (VCO) on the F-5999 board. Frequency Counter	fVR5 (F-5995)	4.25 MHz±30 kHz	1. Connect TP (EFM) to ground on the F-5995 board. 2. For this adjustment run the unit for more than one minute after the power is switched ON.
2	Tracking Offset Adj.	Test Pin TP (T1) on the F-5995 board. Oscilloscope	fVR1 (F-5995)	• Oscilloscope: DC range  Fig.1 • Adjust fVR1 to satisfy as shown in Fig. 1.	1. Play the 8th music on the TEST DISC CD-1. 2. Connect TP (T2) to ground on the F-5995 board. 3. Connect a probe of oscilloscope to TP (T1).
3	Focus Offset Adj.	Test Pin TP (T2) on the F-5995 board. Oscilloscope	fVR2 (F-5995)	• Oscilloscope: DC range  Fig. 2 • Make eye-pattern wavefoam best. (Widen center portion (◊) of wavefoam sufficiently and symmetrically.)	1. Play the 8th music on the TEST DISC CD-1. 2. Connect a probe of oscilloscope to TP (T2).
4	Tracking Gain Adj.	———	fVR3 (F-5995)	• Set the end of groove of fVR3 to the direction of arrow A as shown in Fig. 3	Fig. 3 
5	Focus Gain Adj.	———	fVR4 (F-5995)	• Set the end of groove of fVR4 to the direction of arrow B as shown in Fig. 3.	

5. PARTS LOCATION ON BOARD

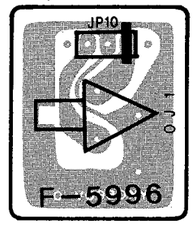
5-1. F-5995 Main Board

Component Side



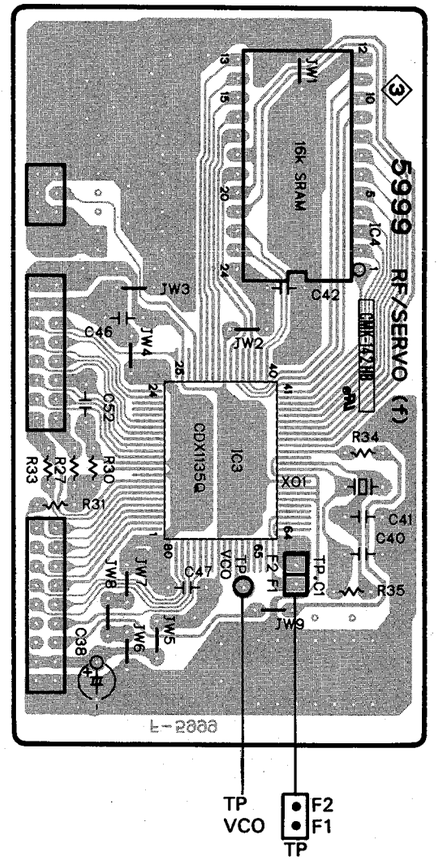
5-2. F-5996 LINE OUT Terminal Board

Component Side



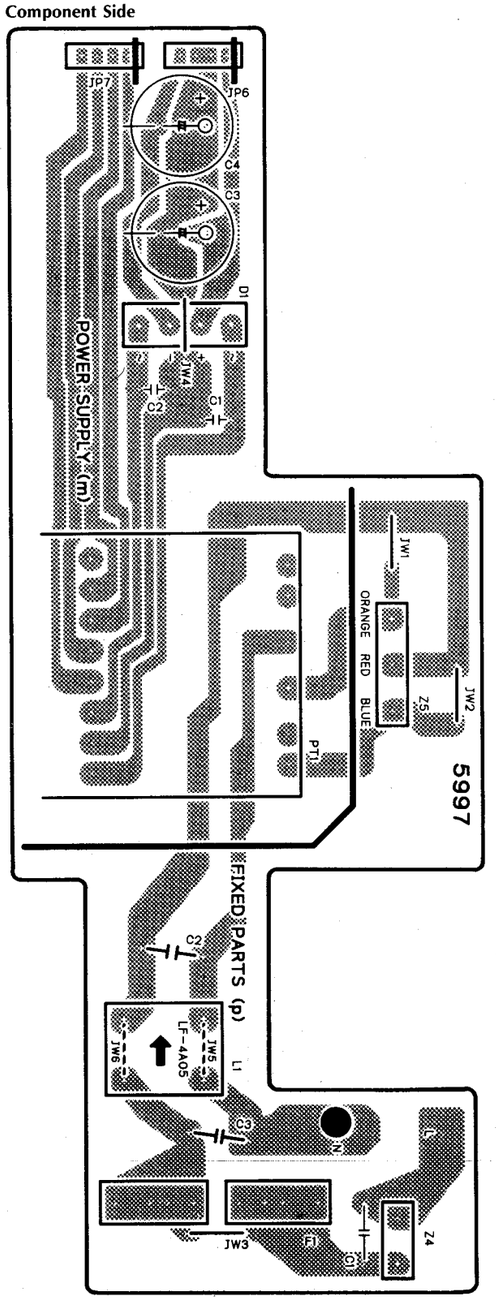
5-3. F-5999 Digital Signal Processing Circuit Board

Component Side



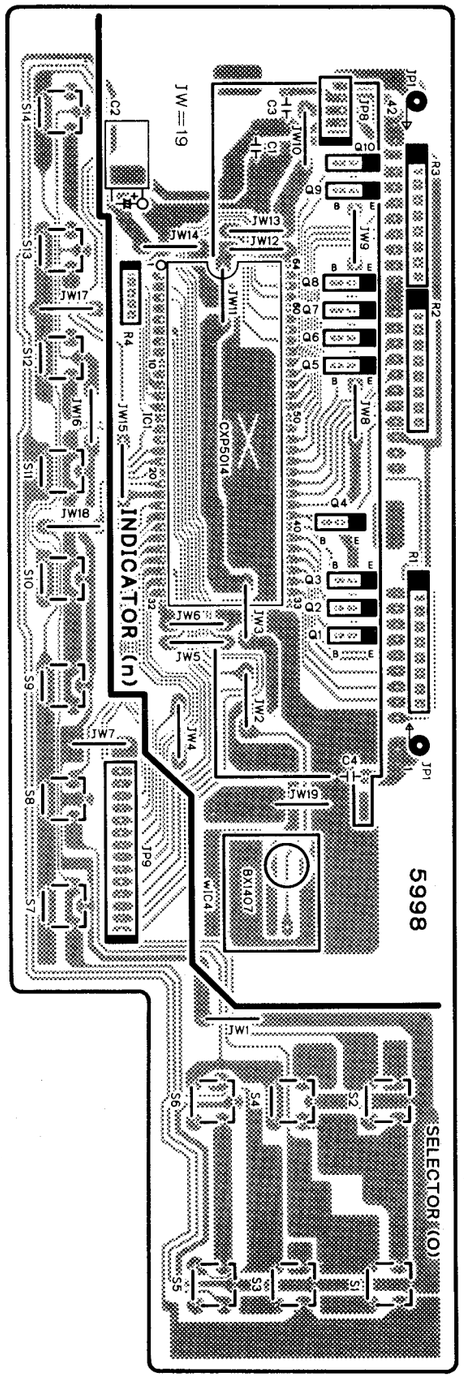
5-4. F-5997 Line Filter Board

Component Side



5-5. F-5998 Operation Switch Board

Component Side



6. PARTS LIST OF BOARD

6-1. F-5995 Main Board <Stock No. 01110501>

Parts No.	Stock No.	Description
•Transistor		
fQ1	46359701	2SA952
fQ2, 3	46367101	2SC2603
	or 48058801	2SC1740S
fQ4	46359801	2SC2001
fQ5	46359701	2SA952
fQ6	48171600	DTC114YS
fQ8	46719800	DTA124ES
fQ9	46719900	DTC124ES
fQ10	46359801	2SC2001
•IC		
fIC1	48839900	CXA1081S
fIC2	48840000	CXA1082AS
fIC5	48667300	STA341M
•Diode		
fD1	46464100	1SS133
fR25	48438400	3.3kΩ 1/5W M.R.
fC3	48748400	0.1μF 50V C.C.
fC6	48087200	0.033μF 50V F.C.
fC7	48748400	0.1μF 50V C.C.
fC8,9	48086000	0.01μF 50V F.C.
fC13	48748400	0.1μF 50V C.C.
fC17, 18	49201400	4700pF 50V F.C.
fC19	48087600	0.047μF 50V F.C.
fC20	48088400	0.1μF 50V F.C.
fC23	48088400	0.1μF 50V F.C.
fC24	48748400	0.1μF 50V C.C.
fC25	48103200	0.47μF 50V E.B.
fC27	48086000	0.01μF 50V F.C.
fC28	48087200	0.033μF 50V F.C.
fC29	48748400	0.1μF 50V C.C.
fC31	48087200	0.033μF 50V F.C.
fC35	49201400	4700pF 50V F.C.
fC37	48748400	0.1μF 50V C.C.
fC43	48748400	0.1μF 50V C.C.
fC50	48663400	470pF 50V C.C.
fL1	48289400	10μH Inductor
fVR1	46634500	22kΩ S.V.R., Tracking offset
fVR2	46634300	10kΩ S.V.R., Focus offset
fVR3	46634500	22kΩ S.V.R., Tracking gain
fVR4	46634500	22kΩ S.V.R., Focus gain
fVR5	48118800	2kΩ S.V.R., VCO adj.
•IC		
kIC1	48577000	M5216L
	or 49325000	NJM4556S
kC4	48662800	150pF 50V C.C.
kVR1	49298300	20kΩ (B) V.R., PHONES
•Transistor		
⚠mQ1	48150101	2SD1406
⚠mQ2	48509101	2SA1488
⚠mQ3	46614001	2SA1283
mQ4	46367001	2SA1115
•FET		
mFT1	46643701	2SK246-GR
mFT2	46643701	2SK246-GR

Parts No.	Stock No.	Description
•IC		
⚠mIC1	07183500	μPC78M05H
⚠	or 48802900	AN78M05F
⚠mIC2	48561000	AN79M05
⚠	or 49311500	μPC79M05H
•Diode		
mD2	46273600	DBB10B
mD3	46464100	1SS133
mD4	46464100	1SS133
•Zener Diode		
mDZ1	48637400	RD24B3 ES
mDZ2	48632800	RD8.2B2 ES
mDZ3	48632800	RD8.2B2 ES
mC11	48088400	0.1μF 50V F.C.
mC12	48088400	0.1μF 50V F.C.
mC13	48748400	0.1μF 50V C.C.
oJ2	49197600	Jack, PHONES
•Transistor		
vQ1, 2	46604301	2SC3327
vQ3	46719800	DTA124ES
•IC		
vIC1	49322500	LC7881-C
	or 49322501	LC7881-B
vIC2	49318700	NJM2082S
vIC3	46147700	M5218L
	or 49263900	NJM2068D
•Zener Diode		
vDZ1	48630800	RD5.1B2 ES
vC3, 4	48748400	0.1μF 50V C.C.
vC7	48086400	0.015μF 50V F.C.
vC8	49201200	3900pF 50V F.C.
vC9	48086400	0.015μF 50V F.C.
vC10	49247700	330pF 50V F.C.
•Transistor		
wQ1	46367101	2SC2603
	or 48058801	2SC1740S
•IC		
wIC1	49298000	CXP5034H-069S
wIC2	49298600	M50747-677SP
wIC3	48982600	LB1641
•Zener Diode		
wDZ1	48553600	MTZ8.2BT-77
	or 48553700	MTZ8.2CT-77
	or 48632800	RD8.2B2 ES
	or 48632900	RD8.2B3 ES
wR12	48774800	100kΩX8 A.R.
wC1~3	48748400	0.1μF 50V C.C.

6-2. F-5996 LINE OUT Terminal

Parts No.	Stock No.	Description
oJ1	49320500	2P Terminal, LINE OUT

6-3. F-5997 Line Filter Board

Parts No.	Stock No.	Description
•Diode		
⚠mD1	03117000	RB152-LFF
mC1, 2	48090600	0.01μF 50V F.C.
⚠pC1, 2	46943200	0.01μF 400V C.C.
⚠pC3	46426500	3300pF 400V C.C.
⚠pL1	49197100	Line Filter

6-4. F-5999 Digital Signal Processing Circuit Board

<Stock No. 01110901>

Parts No.	Stock No.	Description
•IC		
fIC3	48839800	CXD1135Q-Z
fIC4	48718000	TC5517AP-2
	or 48839700	CXK5816PN-12L
	or 48984800	LC3517AL-15
	or 49260400	CXK5816PN-15L
	or 49260500	CXK5816PS-12L
	or 49260600	CXK5816PS-15L
	or 49322700	UM6116-2
fXO1	48592500	Quartz Element HC-49/U
fR30, 31	48442000	100kΩ 1/5W M.R.
fC42	48748400	0.1μF 50V C.C.
fC46, 47	48748400	0.1μF 50V C.C.
fL2	48289400	10μH Inductor

6-5. F-5998 Operation Switch Board

Parts No.	Stock No.	Description
•Transistor		
nQ1 ~ 10	48916900	DTC114YF
•IC		
nIC1	49298700	CXP5014-276S
nFL1	49266410	FV260G FL. Display Tube
nR1	46350500	100kΩX8 1/8W A.R.
nR2	46350500	100kΩX8 1/8W A.R.
nR3	46350500	100kΩX8 1/8W A.R.
nR4	48766200	10kΩX4 A.R.
nC1	48745200	1μF 50V C.C
nC3	48745200	1μF 50V C.C
nC4	48745200	1μF 50V C.C
oS1	49250300	Push SW., ▮▮ PAUSE
oS2	49250300	Push SW., ▶ PLAY
oS3	49250300	Push SW., ■ STOP
oS4	49250300	Push SW., RANDOM
oS5	49250300	Push SW., ▶▶|
oS6	49250300	Push SW., |◀◀
oS7	49250300	Push SW., ▶▶
oS8	49250300	Push SW., ◀◀
oS9	49250300	Push SW., CLEAR
oS10	49250300	Push SW., CHECK
oS11	49250300	Push SW., SET
oS12	49250300	Push SW., TIME
oS13	49250300	Push SW., REPEAT
oS14	49250300	Push SW., OPEN/CLOSE
wIC4	48525000	BX1407 Remote Control Receiver
	or 49324500	SBX1483 Remoto Control Receiver

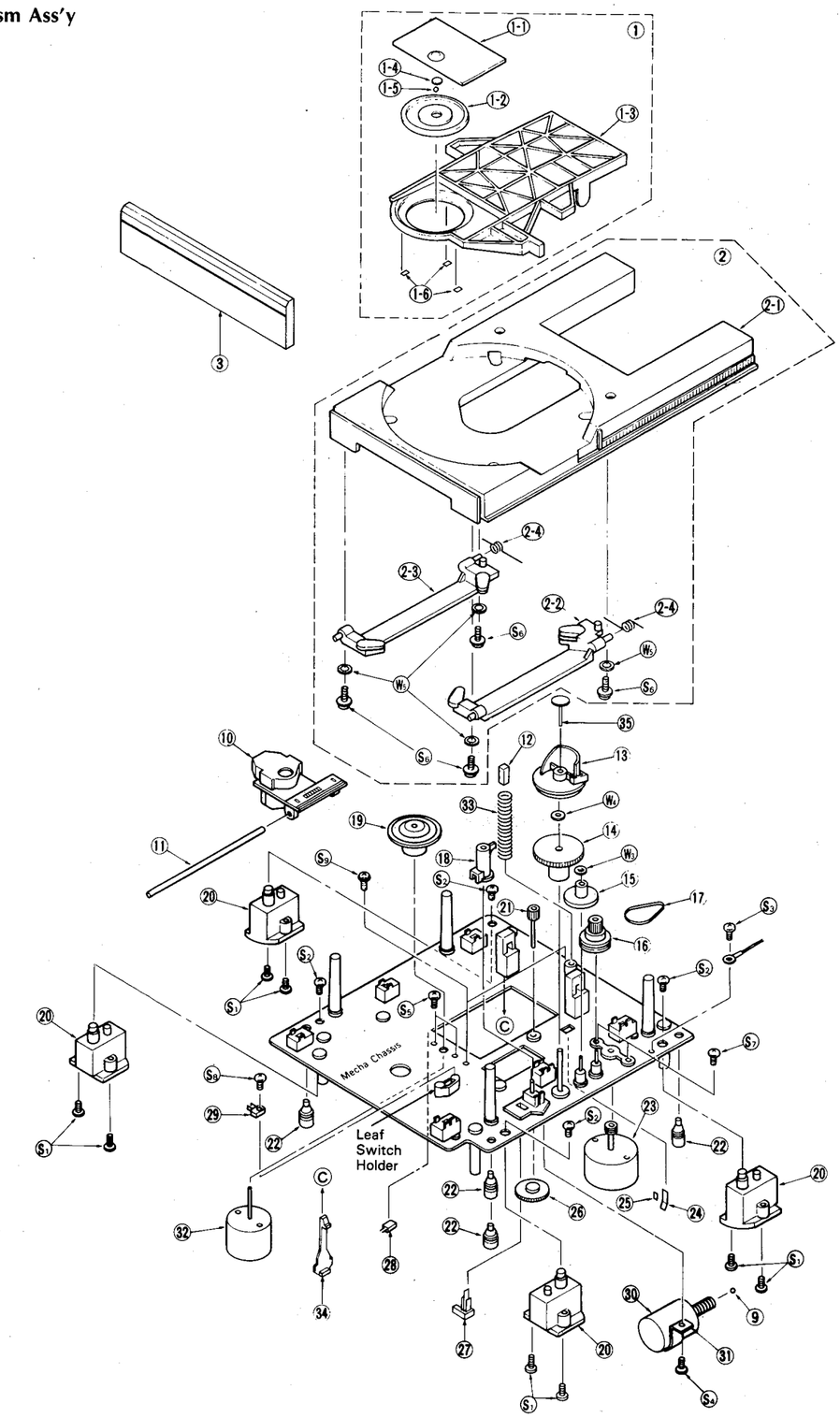
7. EXPLODED VIEW OF MECHANISM ASS'Y AND PARTS LIST

Parts List <Mechanism Ass'y>

Parts No.	Stock No.	Description
1	18178700	Clamp Arm Ass'y
1-1	27365600	Clamp Cover
1-2	27365700	Clamp Plate
1-3	27365800	Clamp Arm
1-4	27365410	Thrust Plate
1-5	27279100	3ϕ Steel Ball
1-6	27423200	Cushion Sheet
2	18159001	Disc Tray Ass'y
2-1	27366700	Disc Tray
2-2	27423400	Right Lifter Ass'y
2-3	27423300	Left Lifter Ass'y
2-4	27364800	Lifter Spring
3	27605700	Disc Tray Panel
9	27279100	3ϕ Steel Ball
10	48830500	Pick-up Ass'y
11	27363800	Support Rail
12	27364500	Spring Damper
13	27367000	Cam Gear
14	27364000	Drive Gear
15	27365200	Loading Gear
16	27422600	Loading Pulley
17	27422700	Belt
18	27364700	Switch Arm
19	27364110	Turn Table Ass'y
20	27604700	CD Holder
21	27644300	Sled Gear A
22	27364400	Floating Rubber
23	18159100	Loading Motor Ass'y (with Pulley)
24	27365500	Plate Spring

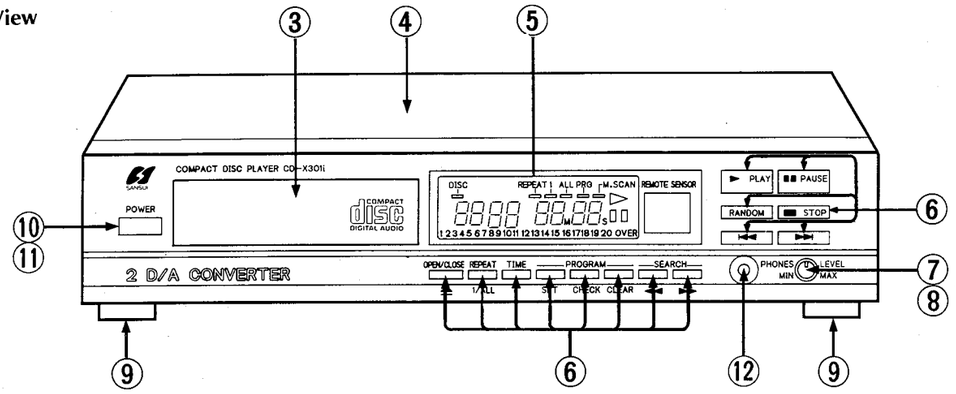
Parts No.	Stock No.	Description
25	27379410	Spacer
26	27365000	Sled Gear B
27	48574400	Loading IN Detector Switch
28	48794000	Sled IN Detector Switch
29	48829000	Loading OUT Detector Switch
30	18159300	Sled Motor Ass'y (with Worm Gear)
31	27366600	Motor Band
32	48584900	Spindle Motor
33	27364200	Clamp Arm Spring
34	27463700	Arm Stopper
35	47420900	Lock Pin
S1	46319800	M3x8 Bind Head Deltite Screw
S2	46268000	M3x8 Franged Head Deltite Screw
S3	13122300	M3x6 Bind Head Machine Screw
S4	18158700	M3x8 Bind Head Screw
S5	46609800	M2x3 Bind Head Machine Screw
S6	49198900	M2.6x6 Washer Head Tapping Screw
S7	00421300	M2.6x6 Bind Head Screw
S8	13301100	M2x8 Bind Head Tapping Screw
S9	51625200	M3x10 Washer Head Tapping Screw
W3	27364300	2.5ϕ Slit Washer
W4	27364600	6.6ϕ Thrust Washer
W5	27537500	Slicon Washer

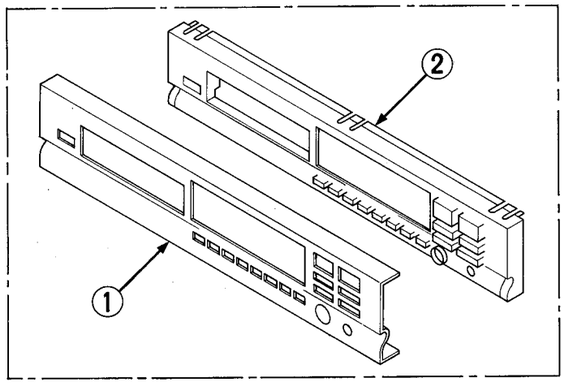
•CD Mechanism Ass'y



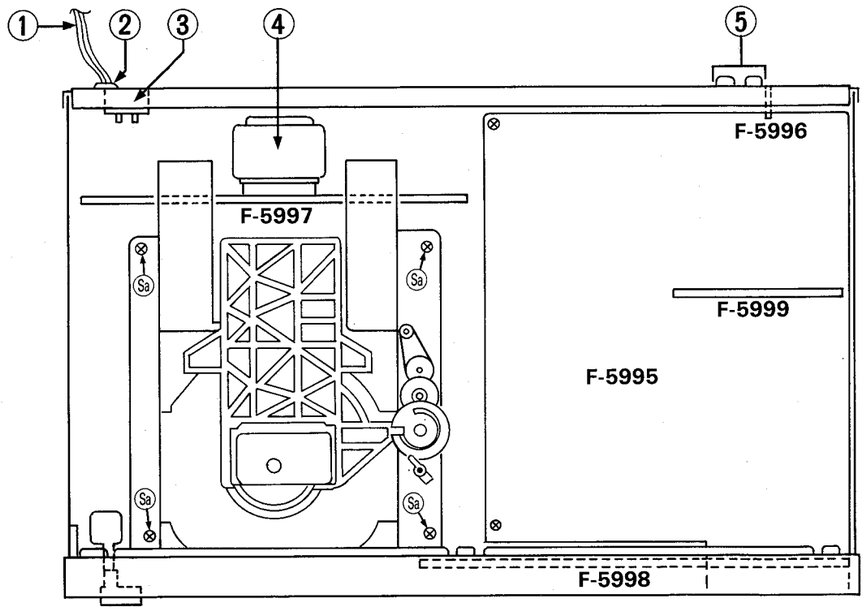
8. OTHER PARTS

•Front View





•Top View



Parts List <Front View>

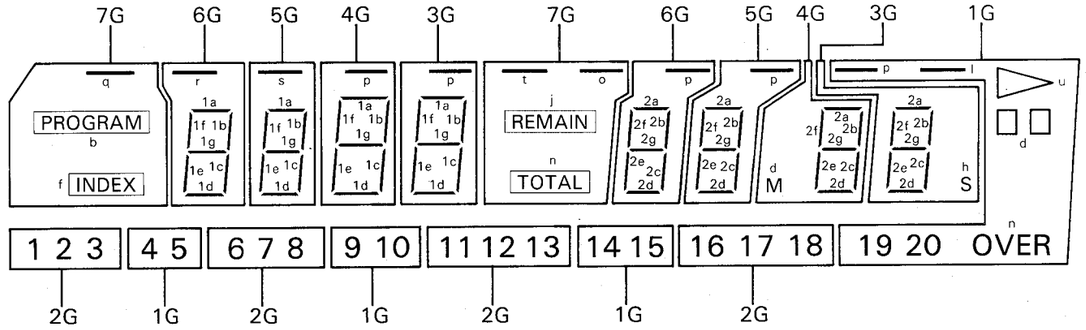
Parts No.	Stock No.	Description
1	27605900	Front Panel Ass'y A
2	27609800	Front Panel Ass'y B
3	27605700	Disc Tray Panel
4	27595500	Bonnet
5	49266410	FV260G FL•Display Tube
6	49250300	Push SW., operation
7	07895410	Knob, PHONES LEVEL
8	49298300	20kΩ (B) V.R., PHONES
9	27273510	Leg
⚠ 10	46364300	Power SW.
11	27604800	POWER Knob
12	49197600	Jack, PHONES

Parts List <Top View>

Parts No.	Stock No.	Description
⚠ 1	38004700	Power Supply Cord (XX•UL & CSA)
⚠	48837700	Power Supply Cord (SS)
⚠	38004500	Power Supply Cord (EU & SEV)
⚠	49252900	Power Supply Cord (UK)
2	39106000	Strain Relief (XX•UL & CSA)
	48913500	Strain Relief (SS•EU•SEV & UK)
⚠ 3	07204700	Voltage Selector SW., (XX•EU•SEV & UK)
⚠ 4	15032601	Power Transformer (XX•SS)
⚠	15032602	Power Transformer (UL & CSA)
⚠	15032605	Power Transformer (EU•SEV & UK)
5	49320500	2P Pin Terminal, LINE OUT

9. DESCRIPTION OF FV260G FL DISPLAY

•Grid Assignment



•Pin Connection

PIN NO.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F	F	NP	1G	2G	3G	4G	5G	6G	7G	q	NP	a	b	f	g	c	e	d	h	r	s	t	NP	NP	NP	NP	NP	NP	NP	NP	i	j	n	o	k	m	l	p	u	NP	F	F

•Anode Connection

Anode \ Grid	7G	6G	5G	4G	3G	2G	1G
a	—	1a	1a	1a	1a	1	4
b	PROGRAM	1b	1b	1b	1b	2	5
c	—	1c	1c	1c	1c	6	9
d	—	1d	1d	1d	1d	8	□□
e	—	1e	1e	1e	1e	7	10
f	INDEX	1f	1f	1f	1f	3	—
g	—	1g	1g	1g	1g	—	—
h	—	—	—	M	S	—	—
i	—	2a	2a	2a	2a	11	14
j	REMAIN	2b	2b	2b	2b	12	15
k	—	2c	2c	2c	2c	16	19

Anode \ Grid	7G	6G	5G	4G	3G	2G	1G
l	—	2d	2d	2d	2d	18	—
m	—	2e	2e	2e	2e	17	20
n	TOTAL	2f	2f	2f	2f	13	OVER
o	—	2g	2g	2g	2g	—	—
p	—	—	—	—	—	—	—
q	—	—	—	—	—	—	—
r	—	—	—	—	—	—	—
s	—	—	—	—	—	—	—
t	—	—	—	—	—	—	—
u	—	—	—	—	—	—	▷

10. INTERIOR BLOCK DIAGRAM & TERMINAL FUNCTION OF IC

•CXP5034H (Mechanism Control)

◆ Terminal Function

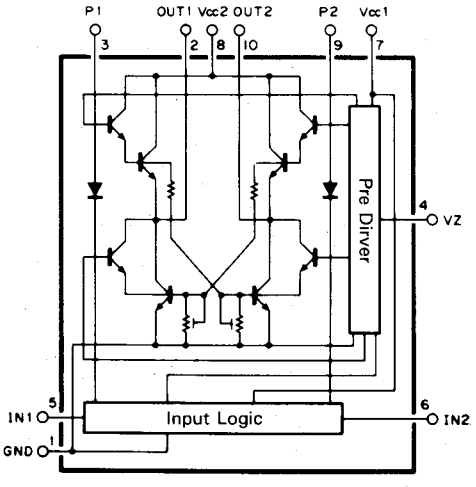
Pin No.	Pin Name	I/O	Description
1	SQCK	I	Terminal to input a clock for subcording Q-channel signal for the CXD1135.
4	SUBQ	O	Subcording Q-channel signal input from the CXD1135.
5	TRAY OUT	I	Disc tray out (loading out) switch input.
6	TRAY IN	I	Disc tray in (loading in) switch input.
7	S STOP	I	Lead-in switch signal input.
8	$\overline{\text{CHANGER}}$	I	Terminal for selecting single and changer. This terminal is fixed at "L" level usually.
9 ~ 12	D0 ~ D3	I/O	Data bus lines from/to the MSM50747.
13	SACK	I	Terminal to input a reseponse signal for parallel data from the MSM50747.
14	SREQ	I	Terminal to input a timing signal for parallel data from the M50747.
15	QINT	O	Terminal to output a interrupting signal to the M50747.
16	MSTB	O	Terminal to output a timing signal for parallel data to the M50747.
17	MACK	O	Terminal to output a reseponse signal for paralledl data to the MSM50747.
18	SHE	O	Terminal to output a signal for high-speed access mode to the MSM50747. High-speed access mode is set at "H" level.
20	TCTC	I	Terminal to input a count signal for track number of disc.
21	Vss	—	Ground.
22	FOK	I	Terminal to input a signal for focus servo OK. Focus servo OK mode in "H" level.
23	GFS	I	Terminal to input a signal for frame sync locked condition from the CXD1135.
24	SENS	I	Terminal to input a condition signal from the CXA1082 and CXD1135.
26	MUTG	O	Terminal to output a muting signal. In muting, this terminal becomes an "H" level.
27	DATA	O	Terminal to output a serial data to the CXA1082 and CXD1135.
28	XLT	O	Terminal to output a latch signal for serial data to the CXA1082 and CXD1135.
29	CLK	O	Terminal to output a clock for serial data to the CXA1082 and CXD1135.
30	$\overline{\text{LDON}}$	O	Terminal to output a signal for the laser diode ON.
31	XRST	O	Terminal to output a reset signal to the CXA1082 and CXD1135.
32	DE	O	Terminal to output a driving signal for deemphasis circuit. Active "H".
35	EXTAL	I	System clock input, typical frequency = 4.2336 MHz.
36	$\overline{\text{RESET}}$	I	Terminal for inputting a reset signal.
37	SCOR	I	Terminal to input a subcording sync S0 + S1 from the CXD1135.
38, 39	TRAY+ TRAY−	O	Terminal to output a signal for loading motor drive.
42	VDD	—	Positive supply voltage: +5V.

•CXP5014 (Display Control)

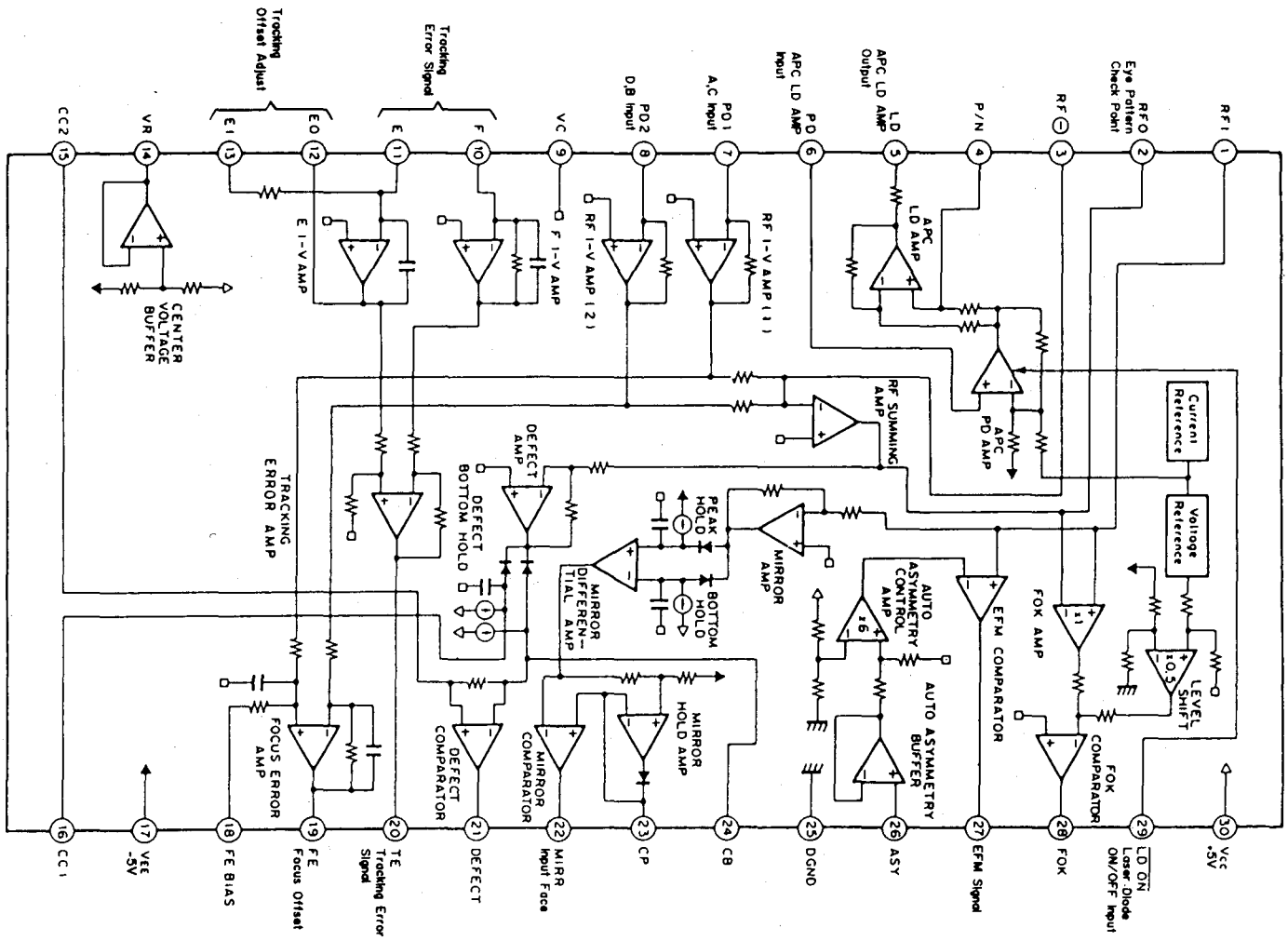
◆ Terminal Function

Pin No.	Pin Name	I/O	Description
3	RMC	I	Remoto controller signal input.
4	CLK	I	Serial data clock input from the M50747.
7	SDATA	I	Serial data input from the M50747.
8	SACK2	O	Terminal to output a response signal for receiving serial data to the M50747.
12 ~ 15	PC0 ~ PC3	O	Terminals for outputting a key return signal to externally connected key matrix.
16 ~ 19 • 20 ~ 23	PE0 ~ PE3 • RMD0 ~ RMD3	I	Terminals for inputting a key return signal from externally connected key matrix.
28	SSTB	I	Terminal to input a timing signal for receiving serial data from the M50747.
29	CE	I	Terminal to input a chip enable signal for receiving serial data from the M50747.
30	STB1	O	Terminal to output a timing signal for parallel data from the M50747.
31	ACK2	I	Terminal to input a response signal for parallel data from the M50747.
32	Vss	—	Ground
33 ~ 48	a ~ p	O	Terminals for outputting segment signals to FL display.
50 ~ 56	7G ~ 1G	O	Terminals for outputting grid signals to FL display.
57	VFDP	—	Terminal for connecting a supply voltage to filament of FL display.
59	QINT	I	Terminal to input a chip enable signal for serial data from the M50747.
61	EXTAL	I	System clock input, typical frequency = 4.2336 MHz.
62	$\overline{\text{RESET}}$	I	Terminal for inputting a reset signal.
64	VDD	—	Positive supply voltage: +5V.

•LB1641 (Motor Drive)



•CXA1081S (RF Amp.)

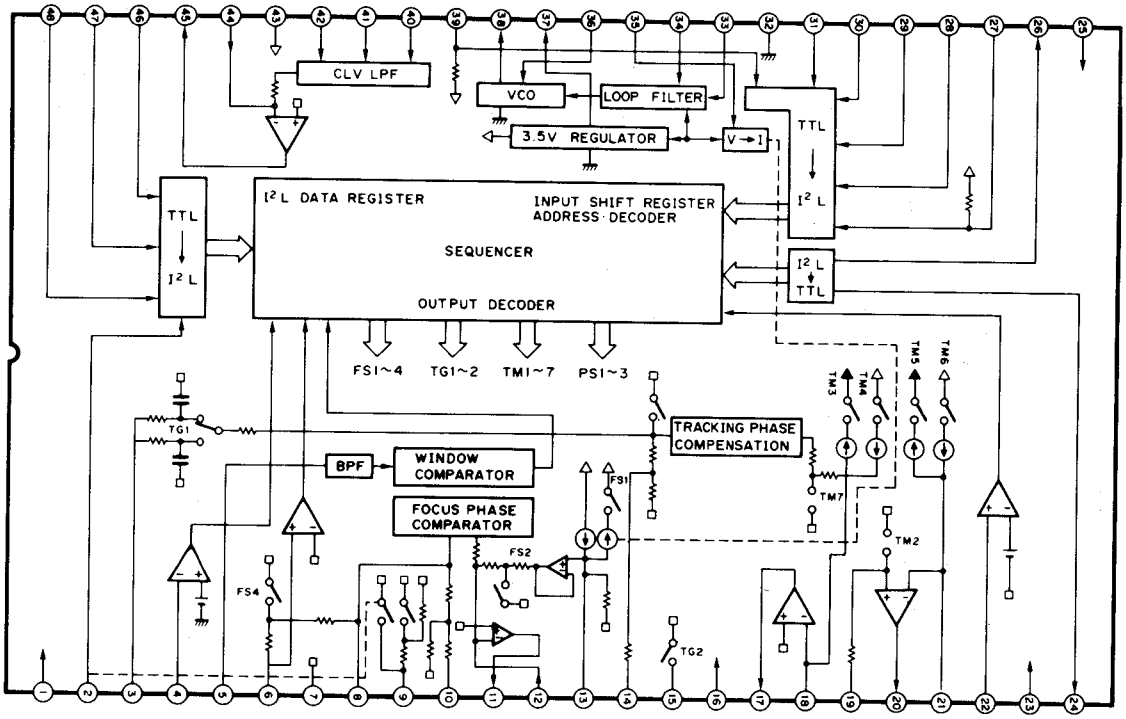


♦Terminal Function <CXA1081S>

Pin No.	Pin Name	I/O	Description
1	RFI	I	RF summing amplifier input.
2	RFO	O	RF summing amplifier input.
3	RF ⊖	I	RF Summing amplifier feedback signal input.
4	P/N	I	Terminal for switching P-sub/N-sub of LD (laser diode).
5	LD	O	APC LD amplifier output.
6	PD	I	APC PD amplifier input.
7	PD1	I	RF I-V amplifier (1) inverting input. This terminal is connected to the pin diode (A+C).
8	PD2	I	RF I-V amplifier (2) inverting input. This terminal is connected to the pin diode (B+D).
9	VC	—	Ground
10	F	I	F I-V amplifier inverting input. This terminal is connected to the pin diode (F).
11	E	I	E I-V amplifier inverting input. This terminal is connected to the pin diode (E).
12	EO	O	E I-V amplifier output.
13	EI	I	E I-V amplifier feedback input.
14	VR	O	(Vcc+Vee)/2 voltage output.

Pin No.	Pin Name	I/O	Description
15	CC2	I	Defect amplifier bottom hold input. This terminal is connected Pin 16 with a coupling capacitor.
16	CC1	O	Defect amplifier bottom hold output.
17	Vee	—	Negative supply voltage: −5V.
18	FEBIAS	I	Bias terminal for the focus error amplifier non-inverting.
19	FE	O	Focus error amplifier output.
20	TE	O	Tracking error amplifier output.
21	DEFECT	O	Defect comparator output.
22	MIRR	O	Mirror comparator output.
23	CP	I	Mirror comparator non-inverting input. This terminal is connected a mirror hold capacitor.
24	CB	I	This terminal is connected a defect bottom hold capacitor.
25	DGND	—	Ground.
26	ASY	I	Auto asymmetry buffer control signal input.
27	EFM	O	EFM comparator output.
28	FOK	O	FOK comparator output.
29	$\overline{\text{LD ON}}$	I	Laser diode ON/OFF switching input.
30	Vcc	—	Positive supply voltage: +5V.

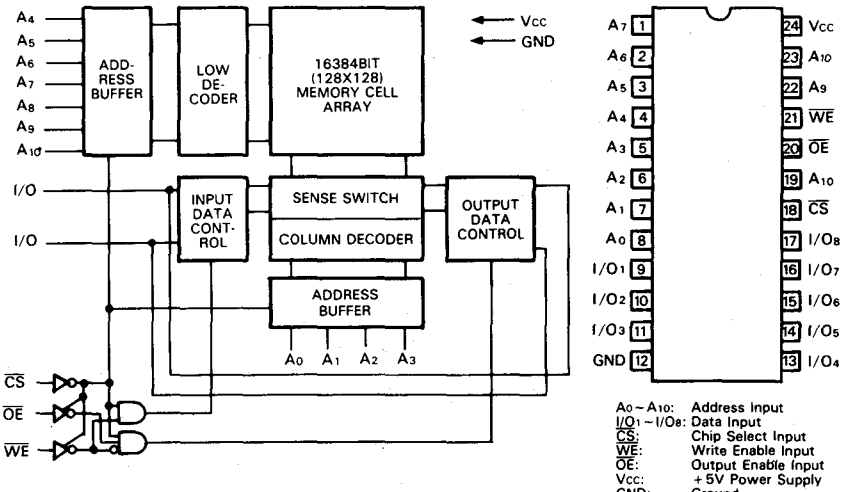
•CXA1082AS (Servo Control)



◆Terminal Function <CXA1082AS>

Pin No.	Pin Name	I/O	Description
8	FGD	I	A capacitor is connected between this Pin and F3 (Pin 9) for decreasing high-frequency gain of focus servo.
9	FS3	O	Terminal for switching high-frequency gain of focus servo.
10	FLB	—	This Pin is used to connect a time constant for increasing low-frequency characteristic of focus servo.
11	FEO	O	Terminal for outputting a signal for driving focus coil.
17	TAO	O	Terminal for outputting a signal for driving tracking coil.
20	SLD	O	Terminal for outputting a drive signal for sled motor.
45	SPDLO	O	Terminal for outputting a drive signal for spindle (disc) motor.
12	FE ⊖	I	Focus amplifier inverting input.
13	SRCH	I	This terminal is used to determine time constant for genarating focus search wavefoam.
14, 15	TGU TG2		Terminals are used to determine a time constant for switching tracking high-frequency gain.
18	TA ⊖	I	Tracking amplifier inverting input.
19	SL ⊕	I	Sled (Feed) amplifier non-inverting input.
21	SL ⊖	I	Sled amplifier inverting input.
22	SSTOP	I	Terminal for inputting a signal from limit switch ON/OFF for detecting innermost track of disc.
23	FSET	I	Terminal for setting focus and tracking phase-compensation peaks and fo of CLV LPF.
24	SENS	O	Terminal for outputting internal condition data.
26	C.OUT	O	Terminal for outputting a signal for counting track number of disc.
27	DIRC		This terminal is used for one-track jump operation.
28	XRST		Terminal for inputting a reset signal. Reset operation in "L" level.
29	DATA	I	Serial data input from the CXP5034H mechanism control.
30	XLT	I	Terminal for inputting a latch signal for serial data from the CXP5034H mechanism control.
31	CLK	I	Serial data clock input the CXP5034H mechanism control.
32	DGND	—	Ground.
34	PDI	I	PDO signal input from the phase-comparator of the CXD1135 digital signal processing.
35	ISET	O	Terminal for outputting a current to determine focus search, track jump and sleding kick height.
36	VCOF	I	VCO free-frequency is practically proportional to resistance between this Pin and Pin 37.
38	C864	O	Internal 8.64 MHz VCO output.
40	MDP	I	A spindle motor driving signal input from the CXD1135 digital signal processing (MDP terminal).
41	MON	I	A spindle motor ON/OFF signal input from the CXD1135 digital signal processing (MON terminal).
42	FSW	—	This terminal is used to determine a time constant for LPF of CLV servo error signal.
44	SPDL ⊖	I	Spindle drive amplifier inverting input.
46	WDCK	I	Auto sequence clock input. Typical frequency = 88.2 kHz.
47	FOK	I	FOK signal input from the CXA1081S.
48	MIRR	I	Mirror comparator signal input from the CXA1081S.
2	DFCT	I	Defect comparator signal input from the CXA1081S.
3	TE	I	Tracking error amplifier signal input from CXA1081S.
4	TZC	I	Tracking zero cross comparator signal input.
5	ATSC	I	Window compartor input for ATSC detection.
6	FE	I	Focus error amplifier signal input.

•TC5517AP/CXK5816PN/LC3517AL/UM6116 (2048 Word x 8 bit Static RAM)



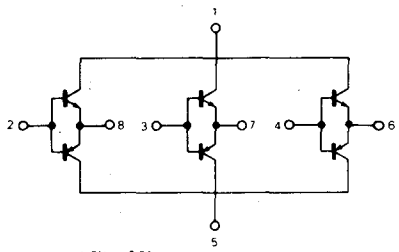
A0 ~ A10: Address Input
I/O1 ~ I/O8: Data Input
CS: Chip Select Input
WE: Write Enable Input
OE: Output Enable Input
Vcc: +5V Power Supply
GND: Ground

◆ Action Mode

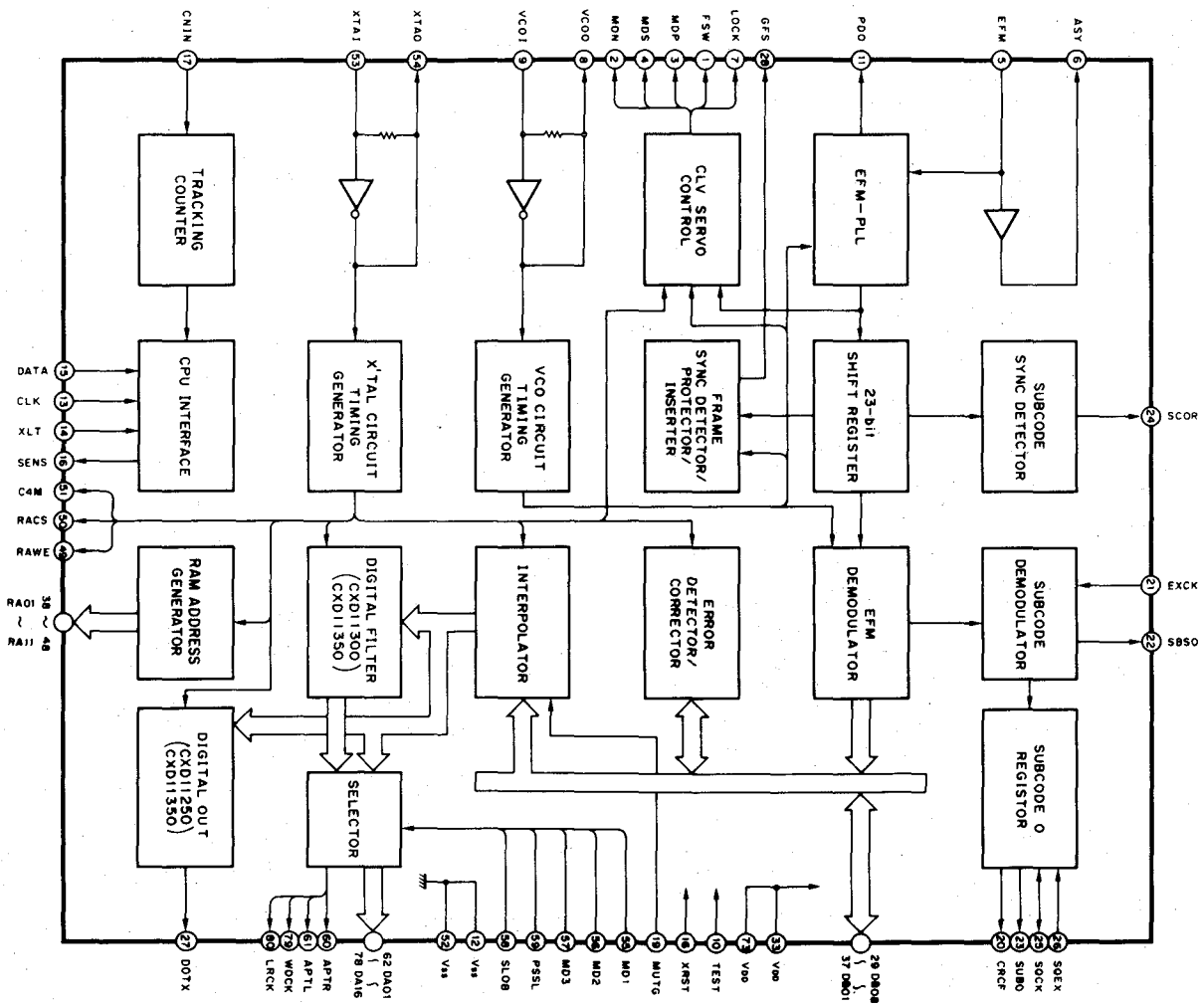
CS	OE	WE	CHIP	OUTPUT MODE	CURRENT
H	X	X	Non Select	High Impedance	Iccs
L	H	H			
L	L	H	Read	Dout	Icca
L	X	L	Write	Din	

H: High Level
L: Low Level
X: High or Low Level

•STA341M (Transistor Array)



•CXD1135Q (Digital Signal Processing)

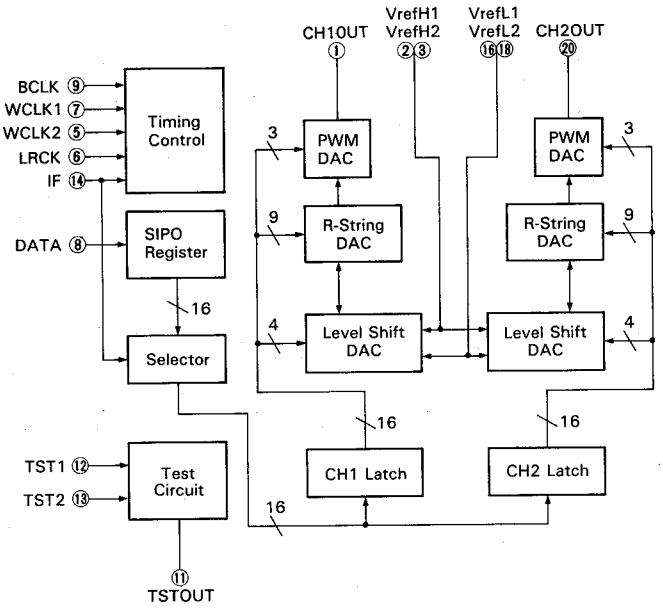


◆ Terminal Function <CXD1135Q>

Pin No.	Pin Name	I/O	Description
1	FSW	O	Terminal to output a time constant switching signal for output-filter of spindle motor.
2	MON	O	Terminal to output a control signal for spindle motor ON/OFF.
3	MDP	O	Spindle motor drive output. For CLV-S mode rough control and CLV-P mode phase control.
4	MDS	O	Spindle motor drive output. For CLV-P mode speed control.
5	EFM	I	Terminal to input a EFM signal from RF amplifier (CXA1081S).
6	ASY	O	Terminal to output a control signal for EFM signal slice level.
7	LOCK	O	The GFS signal is sampled at WFCK/16: if "H", "H" is output through this terminal. If "L" for 8 consecutive times, "L" is output.
8	VCOO	O	VCO output. When locked to the EFM signal, f=8.6436 MHz.
9	VCOI	I	VCO input.
10	TEST	I	(0 V).
11	PDO	O	Terminal to output a phase comparison signal for EFM signal and VCO/2.
12	VST	—	Ground (0 V)
13	CLK	I	Terminal to input a transfer clock for serial data from the CXP5034H. Serial data is latched on the rasing edge of the transfer clock.
14	XLT	I	Terminal to input a latch signal from the CXP5034H. Latches a data (serial data from the CXP5034H) of 8-bit shift register to each register.
15	DATA	I	Serial data input from the CXP5034H.
16	XRST	I	System reset input. Reset is performed at "L" input.
17	CNIN	I	Tracking pulse input.
18	SENS	O	Outputs internal condition data for each address.
19	MUTG	I	Muting input. When the internal register ATTM is "L", MUTG sets the normal condition at "L" input, and the muted condition at "H" input.
23	SUBQ	O	Subcording Q data output.
24	SCOP	O	Subcording data sync S0+S1 output.
25	SQCK	I/O	Subcording Q data readout clock input/output.
27	DOTX	I	Digital data output.
28	GFS	O	Frame sync locked condition indicating output.
29	DB08	I/O	External RAM data terminal. DATA8 (MSB)
30	DB07	I/O	External RAM data terminal. DATA7
31	DB06	I/O	External RAM data terminal. DATA6
32	DB05	I/O	External RAM data terminal. DATA5
33	VDD	—	Positive supply voltage.
34	DB04	I/O	External RAM data terminal. DATA4
35	DB03	I/O	External RAM data terminal. DATA3
36	DB02	I/O	External RAM data terminal. DATA2
37	DB01	I/O	External RAM data terminal. DATA1 (LSB)
38	RA01	I/O	External RAM address output. ADDR01 (LSB)
39	RA02	I/O	External RAM address output. ADDR02
40	RA03	I/O	External RAM address output. ADDR03
41	RA04	I/O	External RAM address output. ADDR04
42	RA05	I/O	External RAM address output. ADDR05
43	RA06	I/O	External RAM address output. ADDR06
44	RA07	I/O	External RAM address output. ADDR07
45	RA08	I/O	External RAM address output. ADDR08
46	RA09	I/O	External RAM address output. ADDR09
47	RA10	I/O	External RAM address output. ADDR10
48	RA11	O	External RAM address output. ADDR11
49	RAWE	O	Write enable signal output to the external RAM (active at "L").
50	RACS	O	Chip select signal output to the external RAM (active at "L").
51	C4M	O	X'tal division output. f=4.2336 MHz.
52	Vss	—	Ground (0V).
53	XTAI	I	X'tal oscillator circuit input. f=8.4672 MHz or 16.9344 MHz, depending on the selected mode.
54	XTAO	O	X'tal oscillator circuit input. f=8.4672 MHz or 16.9344 MHz, depending on the selected mode.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Terminal to input a switching signal for audio data output cord. Serial data output at "H". Parallel data output at "L".
59	PSSL	I	Audio data output mode switching input serial output at "L", and parallel output at "H".
62	DA01	O	Outputs DA01 (parallel audio data, LSB) when PSSL="H", and C1F1*1 when PSSL="L".
63	DA02	O	Outputs DA02 when PSSL="H", and C1F2*1 when PSSL="L".
70	DA09	O	Outputs DA09 when PSSL="H", and $\overline{\text{PLCK}}$*2 when PSSL="L".
71	DA10	O	Outputs DA10 when PSSL="H", and UGFS *3 when PSSL="L".
72	DA11	O	Outputs DA11 when PSSL="H", and GTOP *4 when PSSL="L".
73	VDD	—	Positive supply voltage: +5 V.
74	DA12	O	Outputs DA12 when PSSL="H", and RAOV *5 when PSSL="L".
75	DA13	O	Outputs DA13 when PSSL="H", and C4LR *6 when PSSL="L".
76	DA14	O	Outputs DA14 when PSSL="H", and $\overline{\text{C210}}$*7 when PSSL="L".
77	DA15	O	Outputs DA15 when PSSL="H", and C210*8 when PSSL="L".
78	DA16	O	Outputs DA16 (parallel audio data MSB: when PSSL="H", and DATA*9 when PSSL="L".
79	WDCK	O	Strobe signal output. 176.4 kHz at DF ON, 88.2 kHz at DF OFF.
80	LRCK	O	Strobe signal output. 88.2 kHz at DF ON, and 44.1 kHz at DF OFF.

*NOTES:
1. C1F1: C1 decoding error correction condition
   C1F2: data monitoring output.
2. $\overline{\text{PLCK}}$: VCO/2 output. f=4.3218 MHz when locked to the FFM signal.
3. UGFS: Unprotected frame sync pattern output.
4. GTOP: Frame synchronization protected condition indication output.
5. RAOV: ±4-frame jitter absorbing RAM over-flow/under flow indicating output.
6. C4LR: Strobe signal. 352,8 kHz at DF ON, 176.4 kHz at DF OFF.
7. $\overline{\text{C210}}$: C210 inverting output.
8. C210: Bit clock output 4.2336 MHz at DF ON, 2.1168 MHz at DF OFF.
9. DATA: Audio signal serial data output.

•LC7881 (D/A Converter)



♦ Terminal Function <LC7881>

Pin No.	Pin Name	I/O	Description
1	CH1OUT	O	A channel 1 analogue data output.
2	VrefH1	I	Reference voltage input 1. (HIGH level)
3	VrefH2	I	Reference voltage input 2. (HIGH level)
4	V	—	Positive supply voltage: +5V.
5	WCLK2	I	Word clock input 2. When IF is HIGH, WCLK2 is must be held in LOW. When IF is LOW, channel 1 data is latched by the fallowing edge of word clock (WCLK2).
6	LRCK	I	Strobe signal input from the CXD1135Q. Typical frequency = 88.2 kHz. A channel 1 digital data input when LRCK is HIGH. A channel 2 digital data input when LRCK is LOW.
7	WCLK1	I	Word clock input 1. When IF is HIGH, channel 1 and 2 data are latched by the falling edge of word clock (WCLK1). When IF is LOW, channel 2 data is latched by the falling edge of word clock (WCLK1).
8	DATA	I	Serial data input. When IF is HIGH, the serial data is inputted with most-significant bit first. When IF is LOW, the serial data is inputted with least-significant bit first.
9	BCLK	I	Bit clock input. Typical frequency = 4.2336 MHz. This clock is used to synchronize the serial data.
10	V	—	Positive supply voltage: +5V.
11	TSTOUT	O	Test output; in normal operation this pin should be held open state.
12 13	TST1 TST2	I	Test input; in normal operation this pin should be connected to ground.
14	IF	I	Selects input digital data mode. When IF is HIGH, the digital data is inputted with most-significant-bit first. When IF is LOW, the digital data is inputted least-significant-bit first.

<LC7881>

Pin No.	Pin Name	I/O	Description
15	GND	—	Ground.
16	VrefL1	I	Reference voltage input. (LOW level)
17	GND	I	Ground.
18	VrefL2	I	Reference voltage input. (LOW level)
19	NC	—	Not Connection.
20	CH2OUT	O	A channel 2 analogue data output.

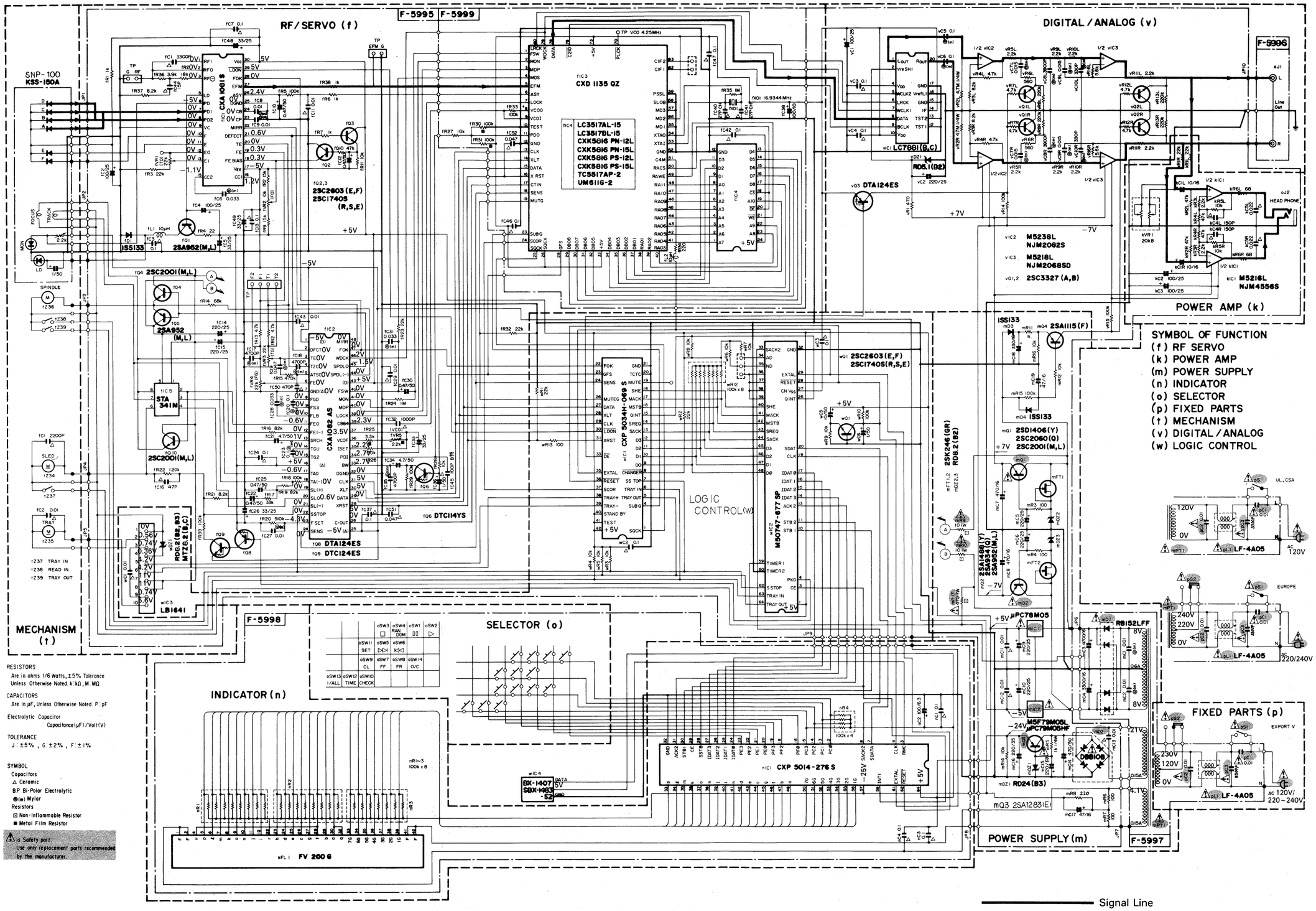
•M50747 (System Control)

♦ Terminal Function

Pin No.	Pin Name	I/O	Description
1	Vcc	—	Positive supply voltage: +5V.
3	CE	O	Terminal to output a chip enable signal for serial data to the CXP5014.
4	PKO	O	Terminal to output a feed-kick signal in POWER ON mode.
10	STB1	I	Terminal to input a timing signal for parallel data from the CXP5014.
11	SSTB	O	Terminal to output a timing signal for serial data to the CXP5034.
13	ACK2	O	Terminal to output a response signal for parallel dat to the CXP5034.
14~17	IDAT3~ IDAT0	I	Terminal to input a key switch and remoto controller data from the CXP5014.
19	CLK	O	Terminal to output a clock for serial data to the CXP5014.
20	SDATA	O	Serial data output to the CXP5014.
26	QINT	I	Terminal to input a interrupting signal from the CXP5034.
27	CNVss	—	0V
28	$\overline{\text{RESET}}$	I	Terminal for inputting a reset signal.
29	EXTAL	I	System clock input: Typical frequency = 4.2336 MHz.
32	Vss	—	Ground
33	SACK	I	Terminal to input a response signal for serial data from the CXP5014.
34	TEST1	I	Test input; not used in normal operation.
35	TEST2	I	Test input; not used in normal operation.
40	SHE	I	Terminal to input a signal for high-speed access mode from the CXP5034H.
41	MACK	I	Terminal to input a response signal for paralled data from the CXP5034H.
42	MSTB	I	Terminal to input a strobe signal for parallel data from the CXP5034H.
43	SREQ	O	Terminal to output a timing signal for parallel data to the CXP5034H.
44	SACK	O	Terminal to output a response signal for parallel data to the CXP5034H.
45~48	D3~D0	I/O	Data bus lines from/to the CXP5034H.
59	TIMER1	I	This terminal is used for inputting a signal for TIMER operation.
62	SSTOP	I	Terminal for inputting a signal from lead-in switch.
63	TRAY-IN	I	Terminal for inputting a signal from loading-in switch.
64	TRAY-OUT	I	Terminal for inputting a signal from loading-out switch.

11. SCHEMATIC DIAGRAM

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



12. HOW TO REPLACE MAIN PARTS

(See Exploded View of Mechanism Ass'y on Page 6)

A. Disc Tray Ass'y ② (See Fig. 12-3 and 12-4)

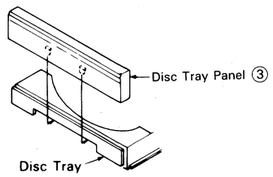
1) Remove the bonnet.
2) Turn the loading gear ⑮ clockwise until the clamp arm ass'y ① is fully up.
3) Grasp the disc tray with your hand and pull it foward until it is secured by the leaf switch holder (See Fig. 12-4).
4) Turn the leaf switch holder fully counterclockwise (in the direction of the arrow) (See Fig. 12-4).
5) Pull the disc tray out forward.

Note:
Be sure to set the leaf switch holder back in its original position after instailing the disc tray.

B. Disc Tray Panel ③

1) Pull the disc tray ass'y forward (See Fig. 12-4).
2) Take off the disc tray panel from the disc tray as shown in Fig. 12-1.

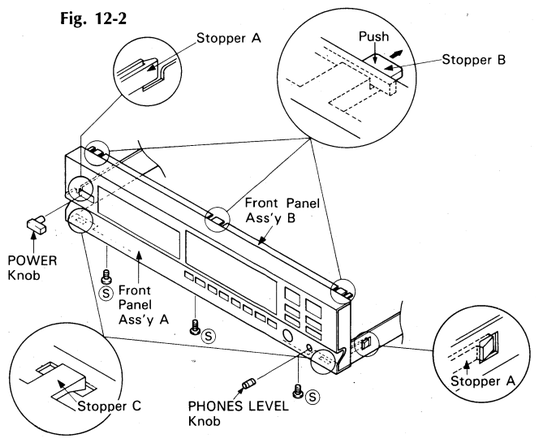
Fig. 12-1



C. Front Panel Ass'y A and B (See Fig. 12-2)

1) Remove the bonnet.
2) Take out the three screws ⑤a from the front panel a'ssy A.
3) Remove the disc tray panel from the disc tray ass'y (See Fig. 12-1).
4) Pull out the POWER knob.
5) Pull out the PHONES LEVEL knob.
6) Disengage the two stoppers A of front panel ass'y B from the chassis.
7) Remove the power switch from front panel ass'y B.
8) Remove the F-5998 board from front panel ass'y B.
9) Disengage the three stoppers B of front panel ass'y B.
10) Disengage the two stoppers C of front panel ass'y B.

Fig. 12-2



D. Mechanism Ass'y

1) Remove the bonnet.
2) Remove the disc tray ass'y from mechanism ass'y.
3) Disconnect five lead wires connectors JP1, JP2, JP3, JP4 and JP5 from the F-5995 board.
4) Take out the mechanism ass'y from the unit.
(Loosen four screws ⑤a, see top view figure on page 7)

Fig. 12-3

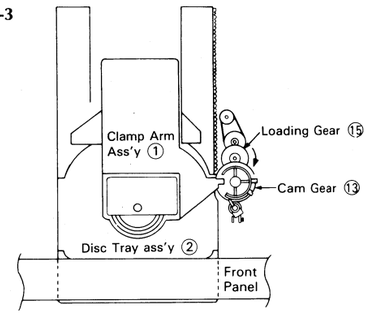
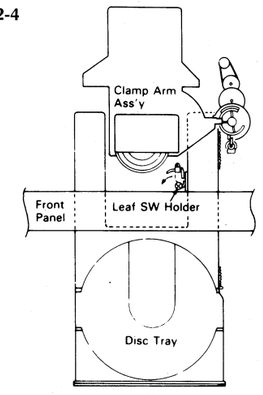


Fig. 12-4



E. Clamp Arm Ass'y ①

1) Take out the mechanism ass'y.
2) Push the clamp arm stopper ㉞ as shown in Fig. 12-5, and remove it from left side clamp arm stand.
3) Detach the clamp arm ass'y from clamp arm stand (See Fig. 12-5).

Fig. 12-5

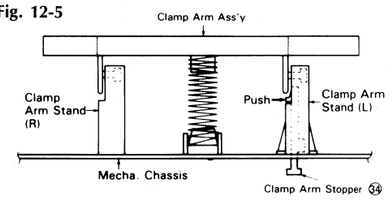
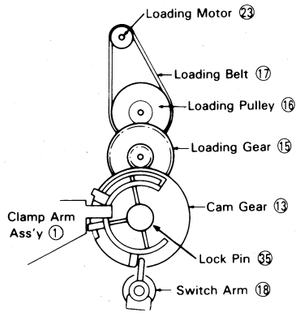


Fig. 12-6



F. Loading Belt ⑰ (See Fig. 12-6)

1) Remove the disc tray ass'y from mechanism ass'y.
2) Remove the switch arm ⑱ from mechanism chassis.
3) Pull out the lock pin ㉟ from cam gear.
4) Remove the cam gear ⑬ and drive gear ⑭.
5) Remove the loading gear ⑮.
6) Remove the loading belt ⑰ from the loading pulley ⑯.
7) Remove the loading pulley.

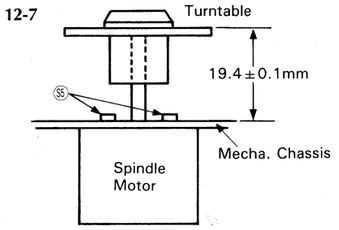
G. Spindle Motor ㉜ or Turntable ⑲

1) Remove the disc tray ass'y.
2) Take out the mechanism ass'y.
3) Remove the clamp arm ass'y from the mechanism ass'y.
4) Detach the turntable ⑲ from the spindle motor.
5) Take out the two screws ㊺ fixing the spindle motor.

* **Notice when installing the turntable to the spindle motor.**

- Install the turntable to the shaft of spindle motor so that the distance between the upper surface of the turntable and mechanism chassis to 19.4±0.1 mm as shwon in figure 12-7.

Fig. 12-7



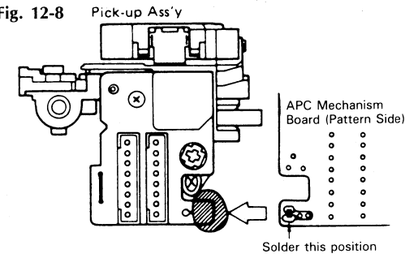
H. Pick-Up Ass'y ⑩

1) Take out the mechanism ass'y from unit.
2) Remove the clamp arm ass'y.
3) Remove the two screws ㊾ fixing the support rail ⑪ (with pick up ass'y ⑩).
4) Remove the pick up ass'y ⑩ from the support rail.

Notice:

1. Notice when removing the pick-up for repairing.
   Before removing the laser pick-up, short-circuit the terminals by soldering. This is to prevent damage to the pick-up during removal operation.
   1) Solder the pick-up terminals as shown in Fig. 12-8.
   2) Disconnect the two lead connectors.
2. Notice when replacing the pick-up.
   1) Connect the two lead connectors of pick-up to the APC mechanism board.
   2) Unsolder the short-circuited terminal soldering for protection. (See Fig. 12-8)

Fig. 12-8



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